THE CURE OF HERNIA

BY

HENRY O. MARCY, A.M., M.D., LL.D.

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THE CURE OF HERNIA.[1]

BY HENRY O. MARCY, A.M., M.D., LL.D., BOSTON.

AMONG the many wonderful achievements in the art of surgery of the present generation, the easy and safe cure of hernia may well command high rank. It is very probable that no one of the many problems constantly pressed upon the attention of the surgeon, because of the multitude of sufferers from this affection, received more careful consideration and profound research by the great masters of the past generation. The special student is astonished at the enormous volume of the literature upon this subject. Over eighty of the closely printed quarto pages of the index of our great national medical library are occupied by an abbreviated list of titles alone of authors who have written upon the subject of hernia.

It is questionable if the physician of to-day is more familiar with the anatomy, both normal and pathologic, of hernia than was the student in a former generation. It is certainly true, notwithstanding the careful dissections made for, and often by each medical student before graduation, that we are obliged to refer to the noteworthy works of Camper, Cooper, Scarpa, Cloquet, Langenbeck, Bourgery, and others of an earlier period for our most accurate and exhaustive illustrative teaching upon this subject. Indeed, in the earlier period operations undertaken for the

[1] Address before the Surgical Section of the Suffolk District Medical Society, January, 1897. Illustrated by the stereopticon.

cure of hernia were not infrequent and often were successful.

The key, however, was wanting to unlock the mystery which ever invested the surgical problems, and which gave to the repair processes of wounds the ever-illusive complication of the so-called supervening inflammations. The changes ensuing in incised wounds, made for the proper manipulations of the parts involved in hernia were followed by such a high mortality that experience forbade their continuance, and a quarter of a century ago the methods undertaken for the cure of hernia were limited to pressure processes, injections, and the subcutaneous appliance of wire ligatures; and these, in the hands of the most expert, as a rule, failed to cure.

Profiting by the demonstration that the so-called inflammatory processes supervening in wounds were due to bacteriological infection, and that science rendered it possible for the surgeon to make and maintain aseptic wounds as the decided rule in practice, later it became possible to deal with the various structures which are so deformed as to cause a weakness in the retaining abdominal walls.

This accomplished, the problem was simplified to the reconstruction of the parts after their normal pattern, and this pertains to every variety of hernia. However, in order to do this, one more factor in the surgical problems needed solving, and this appeared to me as plainly evident in 1870 as at the present. As I then thought, profiting from Mr. Lister's personal instructions and marvellous demonstrations, that I had mastered the art of making and maintaining a wound aseptic, it seemed a logical deduction, if primary repair ensued after the constricting of an artery by an animal ligature, the same result would follow the coaptation of the tissues by animal sutures.

It is not my purpose this evening, however interesting and instructive the subject may be, to refer to the evolution of these processes which, little by little, became applicable in the rejoining of all aseptic vitalized structures, and which are in daily practice in every surgical clinic.

It only suffices to say that certain precautionary measures are necessary which must pertain to the closure of all wounds:

(1) That the structures are aseptic.

(2) That they are devitalized as little as possible.

(3) That they are coaptated or rejoined by the use of aseptic absorbable sutures.

(4) That these should be applied so as to hold at rest like structures with the minimum of constriction. This is essential, in order that the vascularization of the parts included shall be diminished as little as possible.

(5) The coaptated structures must lie in easy juxtaposition so as to minimize the possible spaces for the formation of blood-clots, and as little suture material is to be used as will accomplish this purpose, remembering that every superfluous stitch inflicts a damage to the structures which must be repaired and adds suture material which must be absorbed. Undue constriction will frequently cause necrosis of aseptic tissues, which contributes by so much to the possible overburdening of the vital processes. The fatty tissues are the least well vitalized and not seldom break down and cause serious trouble even in aseptic wounds. This is especially true in the thick fatty layers of the abdominal wall.

(6) The skin is to be closed by a fine animal suture applied through the deeper layer only so as to coaptate in even juxtaposition its edges, the suture itself remaining buried. When a wound is thus properly closed in layers, there is nothing to drain, its

coaptation is perfect, and no foreign material is subsequently to be removed from the parts involved. Hence drainage is not required, and the important end is thereby attained which renders it possible to cover the infracted surfaces by a germ-proof seal. This has its ideal accomplishment in the application of a layer of iodoform contractile collodion reinforced by a few fibres of absorbent cotton. The seal should extend sufficiently broadly to hold firmly at rest the evenly approximated edges of the skin. Thus treated, if the wound is *aseptic*, it will remain *aseptic* and *primary union* will supervene. In no part of the body is this more important than in the region of the groin, confessedly one of the most difficult to maintain aseptic under the still too common treatment with drainage and sterilized dressings.

In order to effect the cure of hernia in any part of the body, it is only necessary to become master of these principles and reduce them to accurate, working practice. The former is the *science*, the latter the *art* of surgery. Here we enter a most earnest plea for a thorough familiarity with anatomy and a training in the practice of the art, best acquired under definite personal instruction of a master. The pressing want of to-day is apprenticeship, recognized in the trades, nowhere so important, however, as in the art of surgery. Technique can never be obtained from books.

A brief analysis of the varieties of hernia will necessarily extend beyond the limit of the present occasion, even when treated in abstract, because of the vast extent of the subject.

The simplest form of hernia is perhaps the *Ventral* variety, so commonly met with after laparotomy. Here the dissection must be sufficiently ample to permit the restoration of the sundered structures in co-

ordination. If a considerable peritoneal pouch is found, this may be freely resected and the peritoneum evenly held in coaptation by a line of double continuous tendon sutures. The linea alba must be refreshed, and rejoined in a similar way. The skin is closed and the wound sealed as already described. No abdominal belt or bandage is afterward advised. In a personal experience of nearly, or quite, one thousand laparotomies thus closed, the wounds have remained firm, and hernia has occurred in less than one per cent. of the cases.

Inguinal hernia in the female requires no special description, since to this the principles above mentioned pertain.

Umbilical hernia is more difficult. Here the intra-abdominal pressure is usually much greater, the abdominal wall flat, and the contents of hernial sac are often adherent. Not seldom considerable portions of diseased omentum must be dissected and evenly sutured at its base and excised. The abdominal wall can generally be separated laterally in order to increase greatly the coaptating surfaces and secure a more firm union of the strong, unyielding parietal structures.

Femoral hernia requires a careful dissection, guided by accurate anatomical knowledge. If the sac is large, it is sutured and resected. If small and easily reducible, it is good practice to let it alone. Strong structures are slightly refreshed and evenly coaptated by a double continuous suture, closing the opening well in upon the femoral vein. The second layer of sutures coaptates the thick fascia over the plexus of vessels. In whatever way the sutures are introduced, the sheath of the femoral vessels must be brought clearly into view and is best protected by the finger during the suturing. It is surprising to note how lit-

tle discomfort follows this operation. The results are most satisfactory. So far as I have been able to learn in not a single one of my entire series of cases of femoral hernia has recurrence taken place.

Inguinal hernia in the male. — Only in this variety of hernia, by far the most common and confessedly the most difficult of cure, is there much room left for difference of opinion. By general consensus, the operative wound should be ample to permit of free inspection and easy manipulation of the parts involved. The hernial sac, if at all large, should be opened, its contents inspected and cared for, the sac dissected to its very base, sutured in its long axis and resected. The cord is to be lifted from its bed with a minimum of injury, when it will be noted that in by far the majority of cases, the hernial opening has been caused primarily by an enlargement from above downward of the internal inguinal ring. The structures entering into its composition are relaxed and bulging, and the strong transversalis fascia which makes up the posterior border of the inguinal canal was of primary defective development. It is, indeed, very probable that the larger number of inguinal hernia that occur even late in life are owing to a defective congenital development. By some means the posterior border of the canal must be reconstructed and the canal itself restored to its normal obliquity. This means not so much the transplantation of the cord to new relationships, conditions which have been doubtless recently greatly over-emphasized, as the deflecting of the intra-abdominal pressure so as to bring it at, or near a right angle with the line of the cord, instead of on a line with it. Any method which will accomplish this and permit of primary union will result in the cure of the hernia. The anatomical factorage to be emphasized is the coaptation of the posterior border of Poupart's

ligament to the posterior border of the conjoined tendon quite as high up as is necessary to reform carefully the internal inguinal ring. These structures are coaptated about the cord at its exit from the abdominal cavity. It will be noted that the relaxed transversalis fascia is intrafolded, thereby re-enforcing the posterior border of the canal. The cord is now carefully replaced, and the external sundered structures are rejoined over it. I would emphasize the importance of this procedure, since by so doing a firm strong envelope covers the cord, and the external ring is reformed entirely as in the normal construction of the parts. The advantage of this is apparent in that it protects the abdominal wall from the formation of a direct hernia at the site of the internal inguinal ring.

In this and the character and method of suturing consists the chief differences between the operation called after my name which I have so long advocated and the various modifications, known as the Bassini, Halsted, Fowler, and other methods.

When all the aponeurotic structures, which go to make up the walls of the inguinal canal, are sutured *beneath* the cord, the transplantation of it has been by a direct opening through the strong abdominal wall, and the new canal or bed of the cord is found entirely in the fatty subcutaneous tissues. Even when the nutrition of the testicle does not suffer by this violent transplantation, a new danger is added in the subsequent risk of a direct hernia, occurring through a small opening which must necessarily remain in the abdominal wall.

This is ever in direct line of the intra-abdominal pressure and will be found liable to yield to it in the subsequent history of the patient.

In evidence that this is not an hypothetical criticism is adduced the fact that within a year I have myself

operated upon four cases of recurrent direct hernia, following operation by this method.

The plain corollary to the problem is that the surgeon should follow strictly the teachings of normal anatomy and reconstruct the structures as far as possible after the primal order of normal development.

This occasion demands a brevity which permits the criticism of dogmatism. At the risk of emphasizing it, I trust I may be permitted to state briefly that my experience extending over a quarter of a century seems ample to corroborate the statements herein made. In a series now numbering nearly four hundred cases, where the operation has been undertaken for cure, I have yet to see a case where the life of the patient seemed endangered when the integrity of the intestine was not involved. I have operated at all ages from two months to eighty-three years, involving perhaps every variety of hernia. So far as I have been able to trace results, more than ninety per cent. of the cases have remained permanently cured. As a rule, the patient is permitted to leave the bed at the end of the third or fourth week, resuming light duties at the end of the sixth week. No supporting bandages of any character are advised.

My first cases operated upon for the cure of hernia by complete primary closure of the wound by the use of buried catgut sutures occurred in 1870, and were published in the *Boston Medical and Surgical Journal* the following year.

Soon after I instituted a long series of original investigations upon animals in order to determine the exact results which supervened in wounds thus closed. It was clearly demonstrated that an aseptic animal suture was first inclosed by leucocytes which, little by little, invaded its structure with a resulting formation

of a living band of connective tissue, replacing the foreign material.

Based upon these demonstrations I readily determined the great importance and value of buried aseptic sutures in all aseptic wounds, nowhere more apparent, however, than in their application for the cure of inguinal hernia.

These demonstrations I made public by a series of articles upon the subject, and it was not until after the acceptance of these teachings, that it became possible to formulate or put into practice any of the modifications of procedure, which have been advocated under various names for the cure of hernia.

The great practical difficulty has been in securing suture material of aseptic, trustworthy character which would maintain its integrity sufficiently long to hold in coaptation the sundered parts, finally disappear by absorption, and leave in its place a vitalized band of connective tissue. For this purpose catgut, no matter how prepared (primarily a flat band of obliquely interlaced connective tissue), is necessarily defective. The tendons of various animals are far more satisfactory. Carefully selected tendons from the tail of the kangaroo furnish sutures of nearly ideal perfection.

Dr. W. Coley, of New York, writes me, under recent date, that he has operated upon three hundred and fifty cases, using kangaroo-tendon sutures, with only one death and but two or three relapses.

It is needless to emphasize here the importance of modern aseptic technique, since upon this the safety depends as well as in large degree the results to be obtained. Present experience, however, is ample to prove that the operation for the cure of hernia in the male, the most difficult of all the forms of hernia because of the complication of the cord, is really not

dangerous or difficult, if the principles above mentioned and the anatomy of the parts are well mastered, and the operation for the cure of hernia in a very large proportion of all the sufferers of this distressing and dangerous affliction merits general adoption.

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